

Individual Review Form

Proposal number: 2001-F210-2

Short Proposal Title: Bioaccumulation and Effects of Pesticides and Heavy Metals on Invertebrates and Fish

1a) Are the objectives and hypotheses clearly stated?

It is clear that the project investigators are trying to determine whether pesticides and metals are impacting invertebrate populations and whether higher trophic level organisms (fish) are being impacted due to the bioaccumulation of those pollutants.

1b1) Does the conceptual model clearly explain the underlying basis for the proposed work?

The conceptual model does describe how field studies will be used to evaluate bioaccumulation of pesticides and heavy metals and their collective impact on invertebrates and fish. The conceptual model does not appear to describe how distinctions will be made between the potentially confounding effects of the various contaminants being evaluated.

1b2) Is the approach well designed and appropriate for meeting the objectives of the project?

The approach appears to be well designed to measure the integrated effects of a number of contaminants that invertebrates and fish are exposed to in the Delta. Four sites are to be chosen, but it is not clear how a reference site will be chosen. It may be difficult to find a site in the Delta that is not impacted by the contaminants, which will make determination of the influence of pesticides and metals on population dynamics difficult to determine. The controlled feeding studies in the lab are an important component, but it is not clear how the experimental design will address the many potential combinations of pesticides and heavy metals and their relationship to acute and chronic toxicity impacts. The investigators indicate that recommendations for best management practices would be made as a result of this study (Task 5, page 6). Since there are no tasks related to BMP development, it does not seem that anything but broad BMP recommendations could result.

1c1) Has the applicant justified the selection of research, pilot or demonstration project, or a full-scale implementation project?

Yes. The project is a basic research project trying to relate the presence of contaminants that bioaccumulate with their effects.

1c2) Is the project likely to generate information that can be used to inform future decision making?

With some modification, the project would likely provide solid indications of which direction additional research should go. Since the investigators are trying to address many contaminants at once, a more refined research program would likely be needed to determine which contaminants are causing any effects that are observed.

2a) Are the monitoring and information assessment plans adequate to assess the outcome of the project?

Collection of monthly samples at four different sampling sites provides for some measure of spatial and temporal distribution of contaminants, but the sampling regime may not be adequate since the exact number of contaminants being assessed does not appear to be described. The determination of a reference site is not discussed in enough detail to determine the adequacy of that aspect of the project.

2b) Are data collection, data management, data analysis, and reporting plans well-described, scientifically sound and adequate to meet the proposed objectives?

There is a very brief description of data handling and storage. It is not clear whether one or more databases will be used. Although it appears that several entities will handle the same sample, there are no provisions for chain of custody and maintenance of sample integrity described.

3) Is the proposed work likely to be technically feasible?

The analytical and sample collection methods described appear to be technically feasible. There is not enough detail to determine whether the experimental design is robust enough to address the hypotheses. The lack of an adequate reference site would make any determination of changes in population structure and dynamics difficult to evaluate.

4) Is the proposed project team qualified to efficiently and effectively implement the proposed project?

The project team appears to be well suited to carry out the work described. They would likely not be suited to provide recommendations on management practices.

Miscellaneous comments

Provide a brief explanation of your summary rating

The project team has put together an ambitious project for evaluating the impacts of a suite of bioaccumulative contaminants on invertebrates and fish. There is not enough detail provided in the project description to determine whether this endeavor will produce statistically meaningful results.

Overall Evaluation

Summary Rating

- ☐ Excellent
☐ Very Good
☐ Good
xxx ☐ Fair
☐ Poor
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